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CALIOPE Mobile

European Air Quality Forecast at hand

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CALIOPE Air Quality Forecast System

Barcelona Supercomputing Center



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- Created in 2005; more than 400 employees.
- Research, develop and manage information technology.
- Facilitate scientific progress and its application in society.

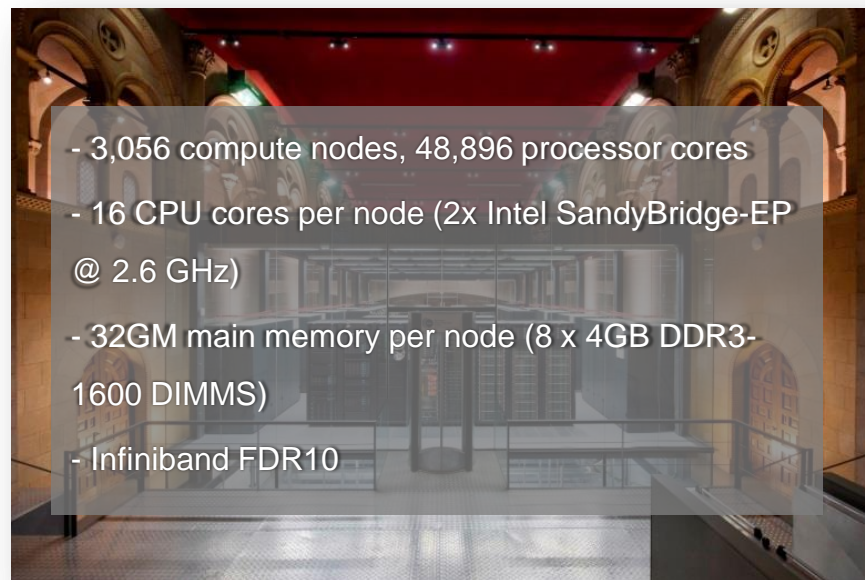
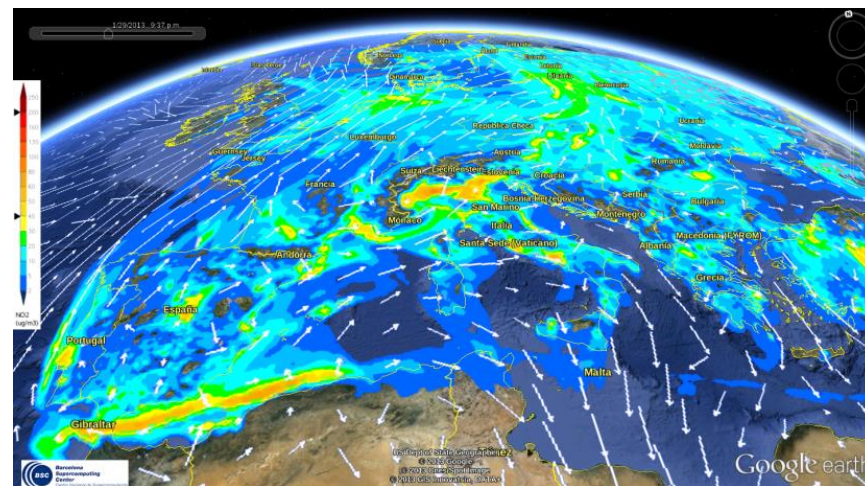


Earth Science Department

- **Atmospheric composition modelling**
- **Climate prediction modelling**
- **Computational Earth Sciences**
- **Earth Sciences Services**



- Operational Air Quality Forecast System.
- 6 nested domains, from 12 to 1km spatial resolution.
- Meteorological, emission and air quality forecast.
- Run daily on Marenostrum III Supercomputer.
- Scientific support: 19 PhD thesis, > 50 papers
- International projects and companies.



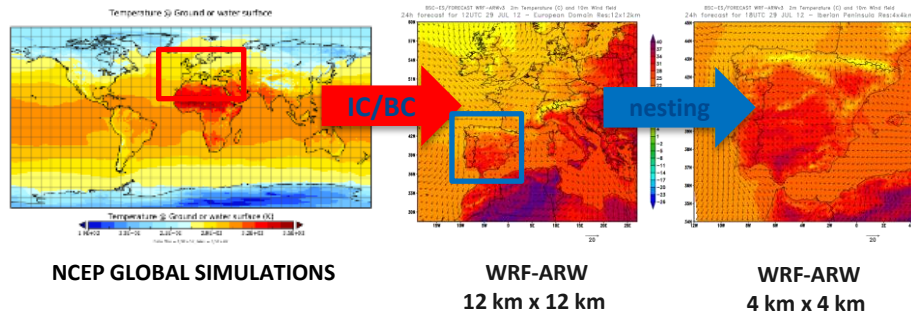
CALIOPE system overview



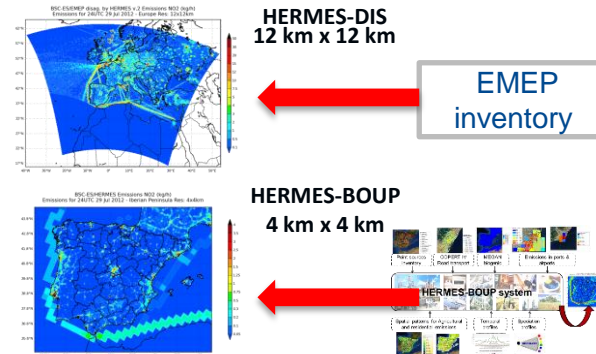
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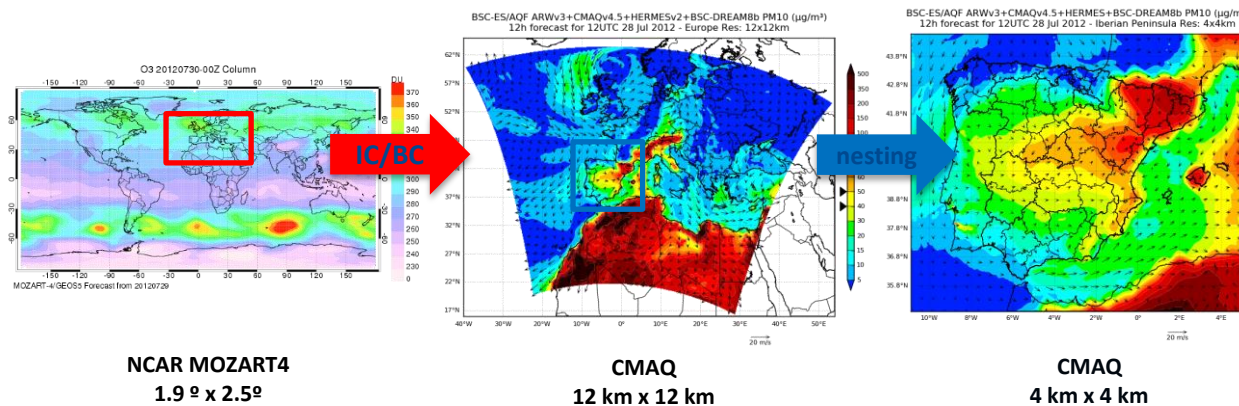
METEOROLOGICAL FORECAST



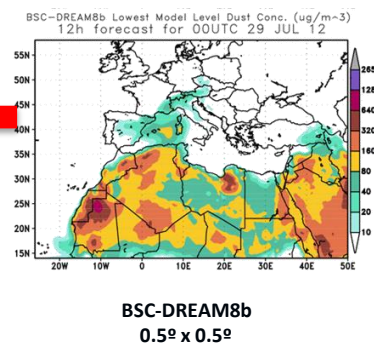
EMISSION FORECAST



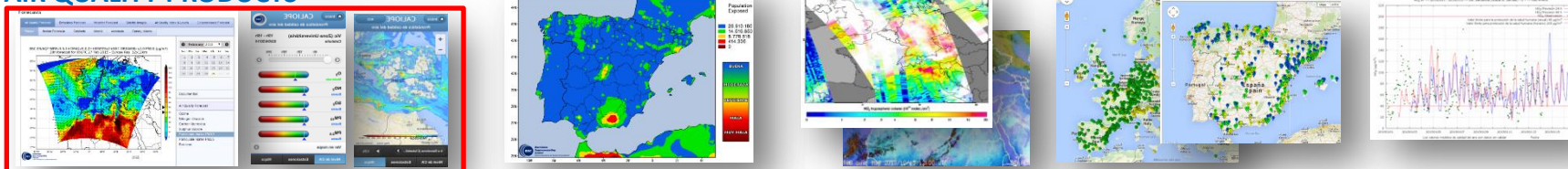
AIR QUALITY FORECAST



DESERT DUST FORECAST

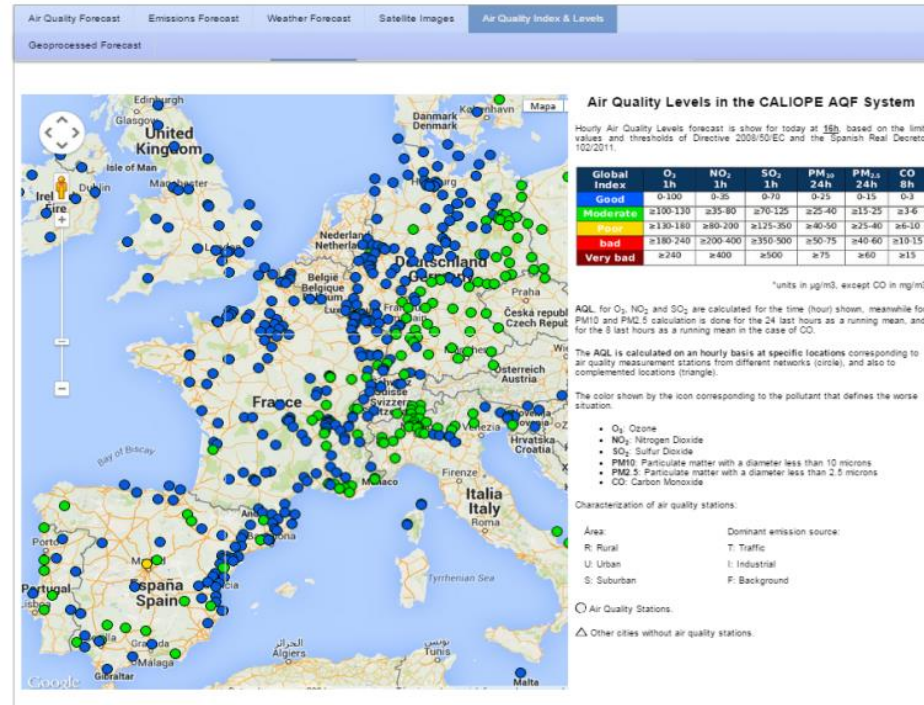
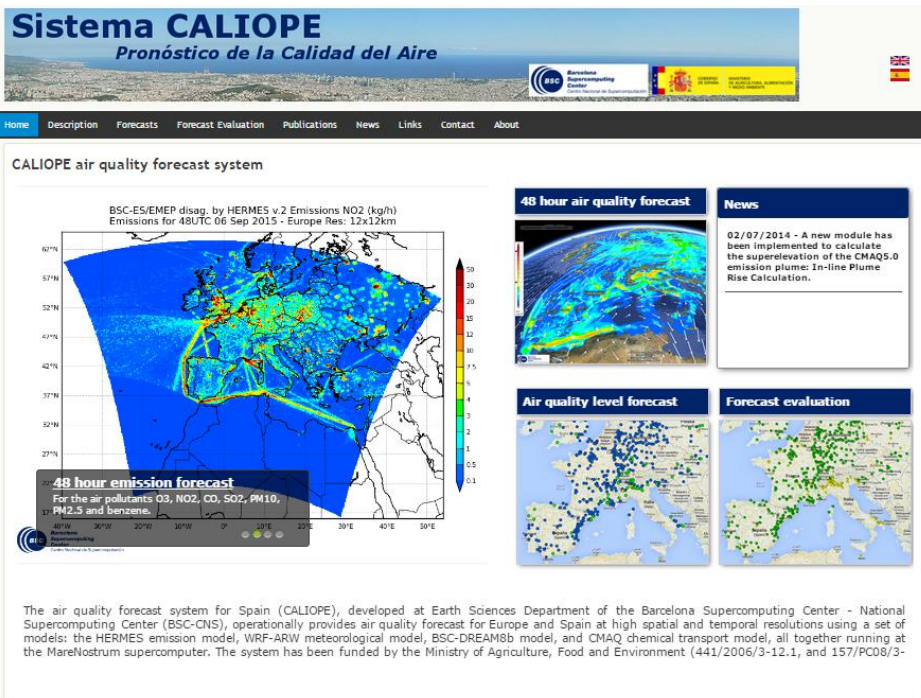


AIR QUALITY PRODUCTS

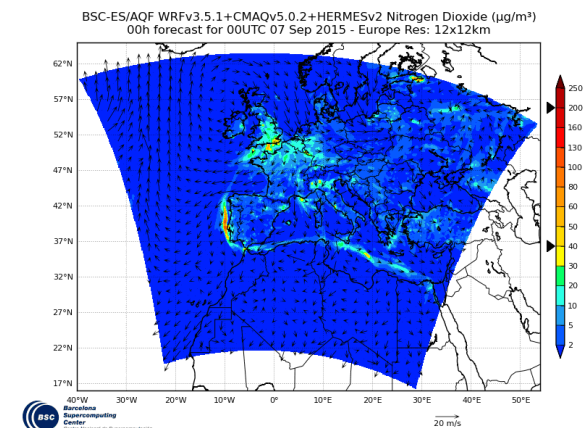


CALIOPE website (www.bsc.es/caliope)

Air Quality Levels for Europe



- What's on CALIOPE website:
 - Air Quality, Weather, Emissions, AQI Forecast.
 - Satellite images.
 - Forecast evaluation.
 - Publications.





CALIOPE EU mobile application

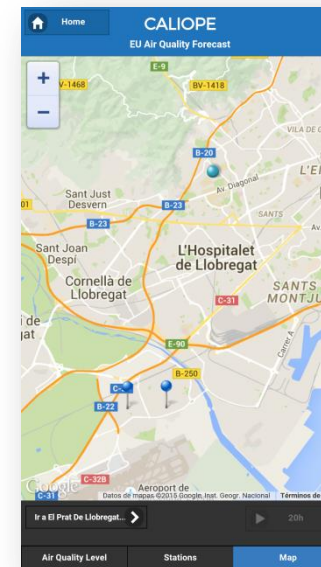
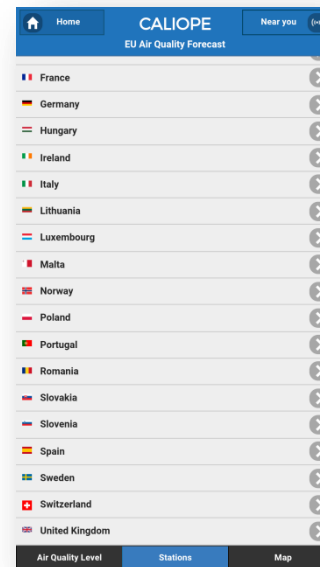
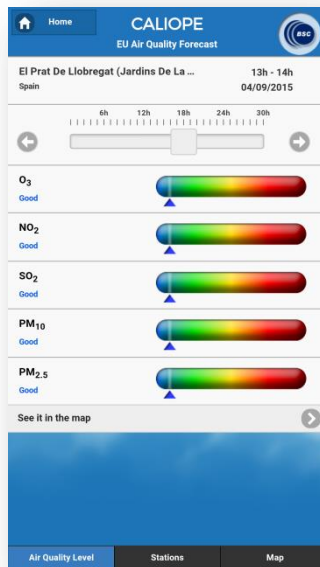


- V1.0, Nov 2013 → IP domain (4x4 km resolution, 431 stations).
- v1.6, Dec 2014 → Canary Islands domain (2x2 km resolution, 483 stations).
- Over 12,000 downloads (Android + iOS).
- EU v1.0, Sep 2015 → Europe domain version (12x12 km resolution, 563 stations) financed by **MYGEOSS**

CALIOPE EU mobile application



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- 48-hour Air Quality forecast.
- Geolocation: Provides information for near stations by using the user device's GPS.
- Search: Stations can be found by country.
- Map visualization: Stations positioned on map.



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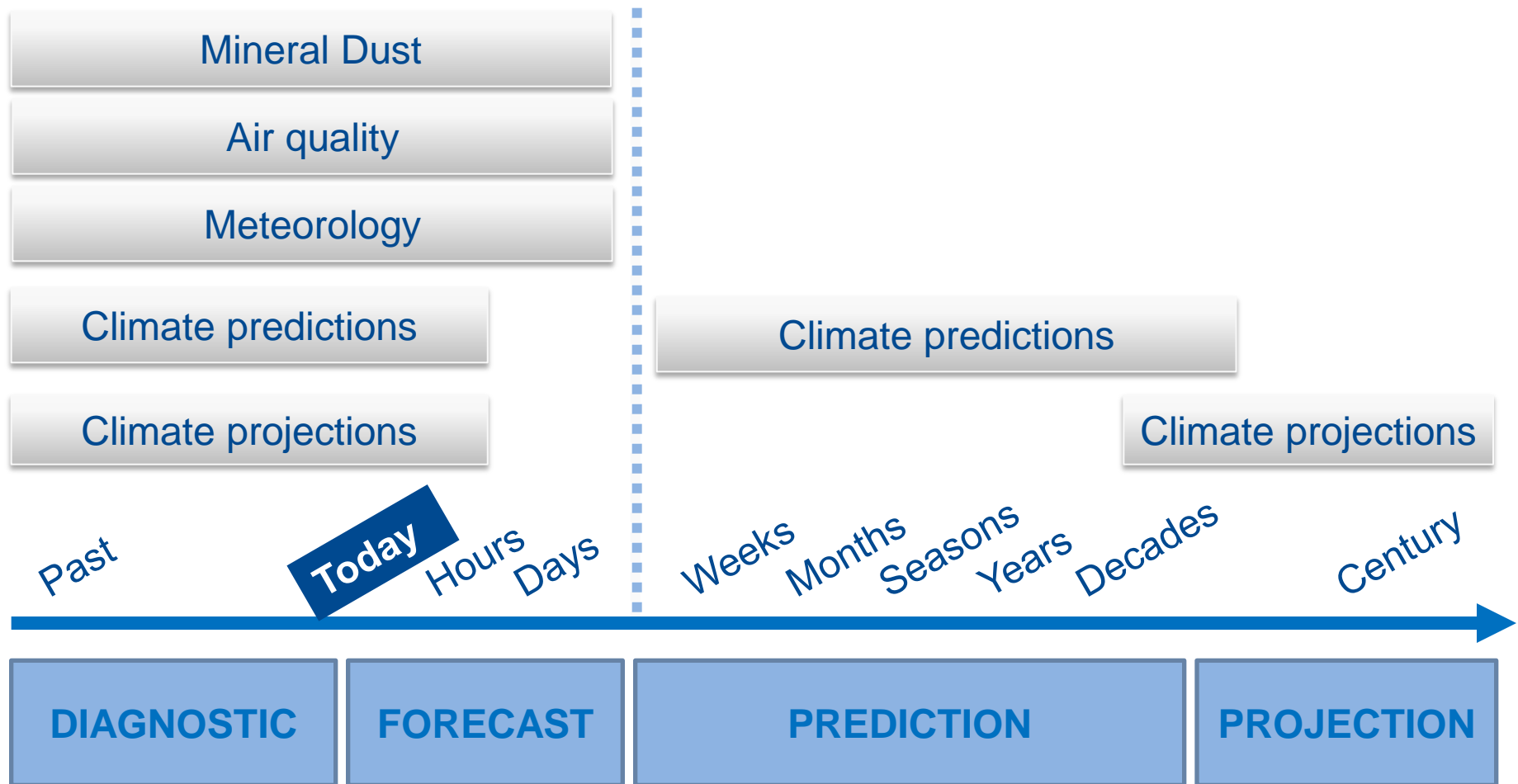
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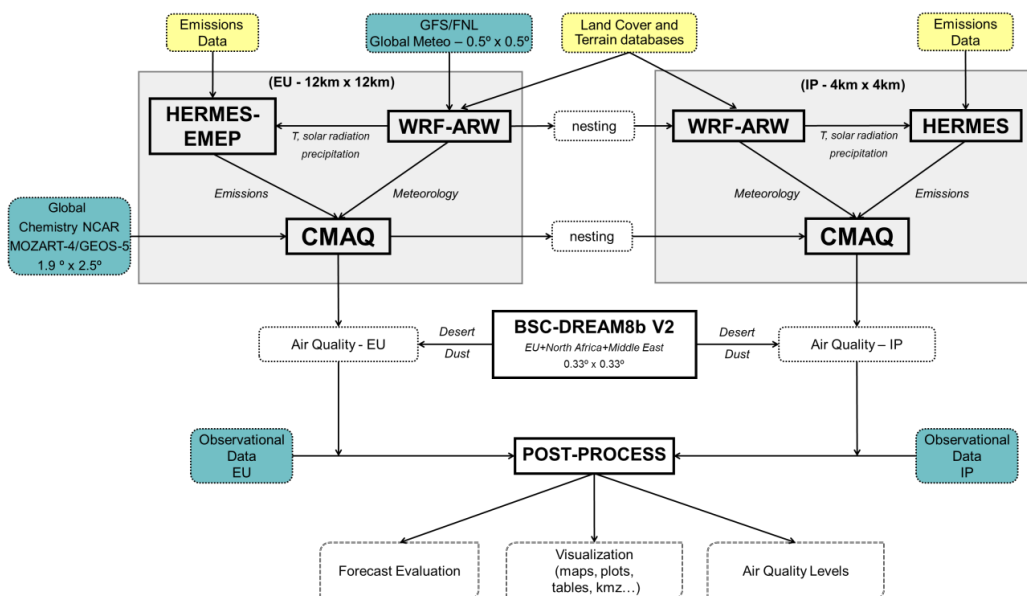


Thank you!

For further information please contact
caliope@bsc.es

Temporal scales





External open data sources, used into the models (yellow):

- ✓ EMEP emission database (CEIP, 2015)
- ✓ CORINE Land Cover v16 04/2012 (EEA, 2012)
- ✓ SRTM DEM v4.1 90m (CGIAR-CSI, 2008)

Open data sources used in operational mode, downloaded daily (green):

- ✓ GFS Meteorological initial conditions (UCAR/NCEP, 2015)
- ✓ Mozart4 /GEOS-5 Chemical boundary and initial conditions (UCAR/NCAR, 2015)
- ✓ The AIRBASE AQ e-Reporting (EEA, 2015).